



Physics

Time Remaining: 45/45 (Minutes)

Q.1

Test 8 Waves

Physics Unit Wise

A source of sound wave emits wave of frequency f . If ' v ' is speed of sound waves. Then what will be the wavelength of the wave

A) $\frac{v}{f}$

C) vf

B) $\frac{v-u}{f}$

D) $(v-u)f$

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Correct Answer:

☐ A ☐ B ☐ C ☐ D

Next



Time Remaining: 44/45 (Minutes)

Q.2

Test 8 Waves

Physics Unit Wise

The fundamental frequency of a string is proportional to

- A) Inverse of the length
- B) The diameter
- C) Tension
- D) Density

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Correct Answer:

☒ A ☐ B ☐ C ☐ D

Next

Back



Time Remaining: 44/45 (Minutes)

Q.3

Test 8 Waves

Physics Unit Wise

The frequency of an open organ pipe is f . If one end is closed then its fundamental frequency will be:

A) $f/2$

B) $3f/4$

C) f

D) $2f$

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Correct Answer:



A



B



C



D

Next

Back



Time Remaining: 44/45 (Minutes)

Q.4

Test 8 Waves

Physics Unit Wise

The length of a string is 1m, tension in it is 40N and mass of the string is 0.1 kg. Then the velocity of transverse waves produced in the string will be:

A) 400 ms^{-1}

B) 180 ms^{-1}

C) 80 ms^{-1}

D) 20 ms^{-1}

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Correct Answer:



A



B



C



D

Next

Back



Time Remaining: 44/45 (Minutes)

Q.5

Test 8 Waves

Physics Unit Wise

When an observer is approaching a stationary source with a velocity v_o then the apparent frequency observed by him will be:

A) $\frac{v}{v+v_o} f$

B) $\frac{v}{v_o} f$

C) $\frac{v+v_o}{v} f$

D) $\frac{v_o}{v} f$

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Correct Answer:



A



B



C



D

Next

Back



Time Remaining: 44/45 (Minutes)

Q.6

Test 8 Waves

Physics Unit Wise

If velocity of sound in air be 350 ms^{-1} , then the fundamental frequency of an open pipe of length 50 cm is:

- A) 175 Hz
C) 700 Hz

- B) 350 Hz
D) 500 Hz

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Correct Answer:

- ☒ A ☐ B ☐ C ☐ D

Next

Back



Time Remaining: 44/45 (Minutes)

Q.7

Test 8 Waves

Physics Unit Wise

The ratio of phase difference and path difference is:

A) $2P$

B) $\frac{2\pi}{\lambda}$

C) $\frac{\lambda}{2\pi}$

D) $\frac{\pi}{\lambda}$

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Correct Answer:



A



B



C



D

Next

Back



Time Remaining: 44/45 (Minutes)

Q.8

Test 8 Waves

Physics Unit Wise

When a light ray passes through one medium to another

- A) Its wavelength changes
- B) Its frequency changes
- C) Both A and B change
- D) None of these

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Correct Answer:

☒ A ☐ B ☐ C ☐ D

Next

Back



Time Remaining: 44/45 (Minutes)

Q.9

Test 8 Waves

Physics Unit Wise

Doppler Effect is used to monitor blood flow through major arteries by ultrasound waves of frequency.

- A) 5 Hz to 10 Hz B) 5 MHz to 10 MHz
C) 5 kHz to 10 kHz D) 5 GHz to 10 GHz

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Correct Answer:

☒ A ☐ B ☐ C ☐ D

Next

Back



Time Remaining: 43/45 (Minutes)

Q.10

Test 8 Waves

Physics Unit Wise

The fixed ends of a vibrating string act as

- A) Antinodes B) Overtone
C) Nodes D) Harmonics

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Correct Answer:

☒ A ☐ B ☐ C ☐ D

Next

Back



Time Remaining: 43/45 (Minutes)

Q.11

Test 8 Waves

Physics Unit Wise

Two waves having same frequency travelling along same line in opposite direction, will produce

- A) interference B) beats
C) stationary waves D) Doppler's effect

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Correct Answer:

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Next

Back



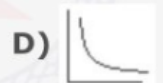
Time Remaining: 43/45 (Minutes)

Q.12

Test 8 Waves

Physics Unit Wise

Which graph represents the variation of waves wave length with speed



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Correct Answer:

☒ A ☐ B ☐ C ☐ D

Next

Back



Time Remaining: 43/45 (Minutes)

Q.13

Test 8 Waves

Physics Unit Wise

Velocity of sound on free space at 0°C

A) 332 m/s

B) 224 m/s

C) 76 m/s

D) zero

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Correct Answer:



A



B



C



D

Next

Back



Time Remaining: 43/45 (Minutes)

Q.14

Test 8 Waves

Physics Unit Wise

Velocity of sound increases twice of its value at 0°C when temp increases

A) 313°C

B) 819°C

C) 859°C

D) 80°C

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Correct Answer:



A



B



C



D

Next

Back



Time Remaining: 43/45 (Minutes)

Q.15

Test 8 Waves

Physics Unit Wise

Wavelength is defined as distance between two particles of medium having a phase difference

A) $\frac{\pi}{2}$ rad

B) π rad

C) $\frac{3\pi}{2}$ rad

D) 2π rad

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Correct Answer:



A



B



C



D

Next

Back



Time Remaining: 43/45 (Minutes)

Q.16

Test 8 Waves

Physics Unit Wise

The increase in the velocity of sound for each 1 °C increase in temperature in air is

- A) 61 m/s B) 6.1 m/s
C) 0.61 m/s D) 6.1 cm/s

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Correct Answer:

☒ A ☐ B ☐ C ☐ D

Next

Back



Time Remaining: 43/45 (Minutes)

Q.17

Test 8 Waves

Physics Unit Wise

A sound wave has a λ in air at 17°C at 27°C , a wave

A) $\lambda = \sqrt{\frac{17}{27}}$

B) $\lambda = \sqrt{\frac{27}{17}}$

C) $\lambda = \sqrt{\frac{290}{300}}$

D) $\lambda = \sqrt{\frac{300}{290}}$

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Correct Answer:



A



B



C



D

Next

Back



Time Remaining: 43/45 (Minutes)

Q.18

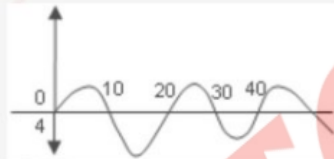
Test 8 Waves

Physics Unit Wise

The wavelength of the wave shown

- A) 8
C) 20

- B) 10
D) 30



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Correct Answer:

- ☒ A ☐ B ☐ C ☐ D

Next

Back



Time Remaining: 42/45 (Minutes)

Q.19

Test 8 Waves

Physics Unit Wise

Which one of the following properties of sound is not affected by change in temperature

- A) Amplitude
B) Frequency
C) speed
D) Wavelength

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Correct Answer:

☒ A ☐ B ☐ C ☐ D

Next

Back



Time Remaining: 42/45 (Minutes)

Q.20

Test 8 Waves

Physics Unit Wise

If two waves of amplitude 'a' produce a resultant wave of 2a amplitude, then they have phase difference of

- A) 0°
C) 120°

- B) 90°
D) 180°

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Correct Answer:

☒ A ☐ B ☐ C ☐ D

Next

Back



Time Remaining: 42/45 (Minutes)

Q.21

Test 8 Waves

Physics Unit Wise

Motion of electron around the nucleus is an example of

- A) Linear motion
- B) Simple harmonic motion
- C) Angular motion
- D) None of these

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Correct Answer:

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Next

Back



Time Remaining: 41/45 (Minutes)

Q.22

Test 8 Waves

Physics Unit Wise

When two wave of same frequency and constant phase difference interfere there is

- A) creation of energy
- B) Loss of energy
- C) Redistribution of energy
- D) Redistribution of energy with its total value remaining same

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Correct Answer:

☒ A ☐ B ☐ C ☐ D

Next

Back



Time Remaining: 41/45 (Minutes)

Q.23

Test 8 Waves

Physics Unit Wise

At the open end of an organ pipe

- A) Nodes are formed
- B) Anti nodes are formed
- C) Nodes or anti-nodes are formed
- D) None

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Correct Answer:

☒ A ☐ B ☐ C ☐ D

Next

Back



Time Remaining: 41/45 (Minutes)

Q.24

Test 8 Waves

Physics Unit Wise

A 200 wave pass through a point in the medium in 1sec with a speed of 20m/s then wave length

A) 20m

B) 2m

C) 400m

D) 0.1m

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Correct Answer:



A



B



C



D

Next

Back



Time Remaining: 41/45 (Minutes)

Q.25

Test 8 Waves

Physics Unit Wise

In a standing wave $\lambda = l$ where l is length of string, the no. of loops on string are

A) 1

B) 2

C) 3

D) 4

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Correct Answer:



A



B



C



D

Next

Back



Time Remaining: 41/45 (Minutes)

Q.26

Test 8 Waves

Physics Unit Wise

How does a speed v of sound in air depend on atmospheric pressure

A) $V \propto P^{-1}$

B) $V \propto P^{1/2}$

C) $V \propto P^2$

D) independent P

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Correct Answer:



A



B



C



D

Next

Back



Time Remaining: 41/45 (Minutes)

Q.27

Test 8 Waves

Physics Unit Wise

The ratio of speed of sound in moist air to that dry air is always

- A) Greater than one B) Equal to one
C) Less than one D) Zero

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Correct Answer:

☒ A ☐ B ☐ C ☐ D

Next

Back



Time Remaining: 41/45 (Minutes)

Q.28

Test 8 Waves

Physics Unit Wise

Air column in a pipe closed at one end is in resonance with a tuning fork of frequency 264 Hz. If the velocity of sound is 332 ms^{-1} , then the length of air column is appropriately:

- A) 31.4 cm B) 62.5 cm
C) 93.8 cm D) 125 cm

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Correct Answer:

☒ A ☐ B ☐ C ☐ D

Next

Back



Time Remaining: 40/45 (Minutes)

Q.29

Test 8 Waves

Physics Unit Wise

A stretched wire with clamped ends has a fundamental frequency of 1000 Hz. What will be the new fundamental frequency if the tension in the wire increase by 2 times?

- A) 980 Hz B) 1020 Hz
C) 1010 Hz D) 1410 Hz

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Correct Answer:

☒ A ☐ B ☐ C ☐ D

Next

Back

Physics

Time Remaining: 40/45 (Minutes)

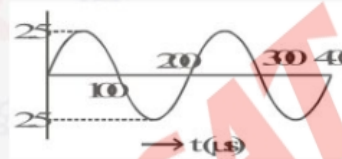
Q.30

Test 8 Waves

Physics Unit Wise

The diagram below represents the variation with time of displacement of a point in air through which a sound wave is travelling at 340 ms^{-1} . What is the frequency of the wave?

- A) 1.7 Hz
- B) $5.0 \times 10^3 \text{ Hz}$
- C) $1.6 \times 10^4 \text{ Hz}$
- D) $3.1 \times 10^4 \text{ Hz}$



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Correct Answer:

☒ A ☐ B ☐ C ☐ D

Submit Quiz

Back

Waves # 02

Answer key

1 A 2 A 3 A 4 D 5 C 6 B 7 B
 8 A 9 B 10 C 11 C 12 A 13 D 14 B
 15 D 16 C 17 C 18 C 19 B 20 A 21
 22 D 23 B 24 D 25 B 26 D 27 A 28 A
 29 D 30 B

MCO #04 $v = \sqrt{T/mle} = \frac{40}{1/10} \sqrt{400} = \boxed{20 \text{ ms}^{-1}}$

MCO #06 $f' = f \frac{nv}{2l} = \frac{1 \times 350}{2 \times 0.5} = \boxed{350 \text{ Hz}}$

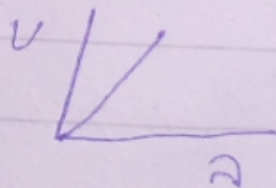
2π - phase difference

λ - wave length

Δ - Path difference

$$\boxed{\frac{2\pi}{\lambda}}$$

MCO #02 $v = f\lambda$ $f = \text{same}$ $\boxed{v \propto \lambda}$



MCO #03 Sound not travel in vacuum due to its mechanical nature

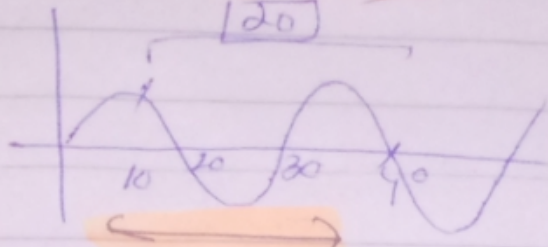
MCO #04 $T' = n^2 T = (2)^2 T = 4 \times (0^\circ)$
 $(4 \times 273 \text{ K})$
 $= \cancel{273} \quad 1092 - 273 = \boxed{809^\circ \text{C}}$

MCE 17 $[V \propto \lambda]$ $f = \text{same}$

$[\lambda \propto T^2]$ Just As speed of Sound

$$\frac{\lambda_1}{\lambda_2} = \frac{\sqrt{290}}{\sqrt{300}}$$

MCE #18



MCE 24

$$v = f\lambda \quad \lambda = \frac{v}{f} = \frac{200}{200} = 10 \text{ m}$$

MCE 25

$$\lambda = 2 \text{ loop} = \frac{2L}{n}$$

$$\text{If } \lambda = 1 \quad f = \frac{v}{\lambda} = \frac{2}{n}$$

MCE No 28

$$f = \frac{v}{\lambda} = \frac{1}{l} \quad l = \frac{v}{4f} = \frac{332}{4 \times 264}$$

Ans $\approx \frac{1}{8}$

$$\text{approx} = \frac{8 \times 332}{4 \times 264} = \frac{1}{3}$$

MCE 29

$$= f \propto \sqrt{T} \quad \sqrt{2T} = \sqrt{78} = \sqrt{1000} \times \sqrt{2}$$

$$1000 \times 1.41 = 1410$$

MCE 30

$$T = 200 \text{ microsecond} \quad f = ?$$

$$v = 340 \text{ ms}^{-1}$$

$$f = \frac{1}{T} = \frac{1}{200 \times 10^{-6}} = \frac{10^6}{200}$$

$$= \frac{10^4}{2} = \frac{10000}{2} = 5000 = (5 \times 10^3 \text{ Hz})$$